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ABSTRACT

This study presents a preliminary exploration of emotion regulation in a sample of 20 children (ages 3-18 years) with Down Syndrome. Three aspects of emotion regulation (modulation, organization, flexibility) were predicted from emotion variables (affect intensity, affective expression, and autonomy-curiosity and motivation) in backward regression models. Emotion regulation was rated by mothers and teachers. Context variable was represented by school or home setting. The results suggest that: (1) the emotional experiences of children with Down Syndrome may be more intense than previously believed; (2) children's emotional behavior is viewed differently by context and rater; and (3) each component of emotion regulation is predicted by a unique configuration of emotional behavior. (Author/EMK)

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Maureen Smith

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Emotion Regulation in Children with Down Syndrome

Abstract

This study presents a preliminary exploration of emotion regulation in a sample of 20 children (ages 3- to 18-years) with Down Syndrome. Three aspects of mother- and teacher-rated emotion regulation (modulation, organization, flexibility) were predicted from emotion variables (affect intensity, affective expression, and autonomy - curiosity and motivation) in backward regression models. The results suggest that: (a) the emotional experiences of children with Down Syndrome may be more intense than previously believed, (b) children's emotional behavior is viewed differently by context and rater, and (c) that each component of emotion regulation is predicted by a unique configuration of emotional behavior.

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Emotion Regulation in Children with Down Syndrome

Introduction

It has been proposed that emotions provide the core of individual continuity throughout the lifespan (Campos, Campos, & Barrett 1989). It also is hypothesized that the main function of the emotion system is to motivate and organize behavior (Cicchetti, Ackerman, & Izard, 1995). Additionally, the regulation of such a system may involve adaptations in one or more of these areas (i.e., physiological, behavioral, cognitive) and is an emergent property of the unique combination of responses for an individual in a particular context.

These hypotheses are particularly interesting in the case of children with Down Syndrome because the majority of empirical studies assessing the social and emotional development of these children describe their affective expressions as "flattened" or "of low intensity" (Ruskin, Mundy, Kasari, & Sigman, 1994; Thompson, Cicchetti, Lamb, & Malkin, 1985). However, research using parent-report suggests these conclusions may be premature (Gunn & Cuskelly, 1991; Vaughn, Conteras, & Seifer, 1994). Beyond these few contradictory results, very little information exists regarding emotion regulation in children (particularly children beyond infancy and very early childhood) with Down Syndrome.

The specific objectives of this study are to examine: (1) emotional regulation in children with Down syndrome and (2) contextual influences (e. g., school versus home) on the affective experiences of children with Down syndrome.

Method

Subjects:

Study participants consisted of 20 children with Down syndrome. The children ranged in age from 32 months to 18 years (M = 97.6 months, SD = 57.1). Ten subjects (50%) were female and all were Caucasian (100%). The mothers of the subjects had an average age of 41.3 years (SD = 5.8) and an average education level of 16.6 years (SD = 2.5). Eighty percent (N = 16) of the mothers were married.

Procedures

The subjects were recruited from a local Down Syndrome parent association and from a school-affiliated program for children with Down Syndrome located at the University. Mothers and teachers completed a questionnaire and returned the questionnaire by mail. There was complete data for 17 of the mother questionnaires and 13 of the teacher questionnaires.

Measures: Dependent Variables

Emotion Regulation: Mothers and teachers rated three aspects of emotion regulation (Modulation, Flexibility, and Organization) on the 24-item Emotion Regulation Checklist (Shields, & Cicchetti, 1994). Alphas for the mother-rated scales were .79, .72, and .70 respectively. Alphas for the teacher-rated scales were .84, .72, and .71 respectively.

Measures: Independent Variables

Emotional Intensity: The Affect Intensity Measure (AIM: Larsen & Diener, 1987) has subscales for positive and negative affect. The scale was modified for use with children by having teachers and mothers rate the items with respect to the target children (Walden, Lemerise & Gentile, 1992). Alphas for mother-report were .95 (positive) and .82 (negative) and for teacher-report were .96 (positive) and .92 (negative).

Emotional Expression: Mothers and teachers used the Affect Expression Rating Scale for Children (AERS-C: Buck, 1977) to indicate children's emotional expression. Exploratory factor analysis revealed three subscales for mother-report: competent expressivity (alpha = .90), withdrawal (alpha = .86), and aggressive-extroverted (alpha = .78). Exploratory factor analysis revealed three subscales for teacher-report: competent expressivity (alpha = .88), withdrawn/difficult (alpha = .52), and aggressive-extroverted (alpha = .62).

Autonomy/Independence: Mothers and teachers rated children's autonomy (e.g., curiosity and exploration, motivation) on a 9-point Q-scale derived from Q-sort profiles (Shields, & Cicchetti, 1994). Alphas for the mother- and teacher-rated scales were .79 and .86 respectively.

Results

Age was correlated with mother-ratings of AERS-C aggressive-extroverted ($r = .46$, $p < .05$). Mother education was correlated with mother-ratings of autonomy ($r = -.55$, $p < .05$) and AERS-C withdrawal ($r = .60$, $p < .05$). Gender, marital status, and maternal age were not associated with any of the mother-rated variables. None of these demographic variables were associated with the teacher-rated variables. The mother- and teacher-rated variables were not correlated significantly.

Separate backward regression models were used to estimate the contributions of the 12 (mother- and teacher-rated) independent affect variables to the three mother- and three teacher-rated emotion regulation variables. Age and maternal education were included in each model.

Mother-Rated Emotion Regulation:

Table 1 presents the standardized regression coefficients, F values, and adjusted R^2 from the three regression analyses. The data revealed that each component of emotion regulation was best predicted by a unique combination of mother-and teacher-rated emotion variables. For example, emotion modulation was predicted by mother-rated autonomy, mother-rated positive intensity, and teacher-rated aggressive-extroverted. Flexibility, however, was best predicted by age, maternal education, mother-rated autonomy, mother-rated positive intensity, mother-rated negative intensity, teacher-rated positive intensity, teacher-rated aggressive-extroverted, and teacher-rated emotional competence.

Teacher-Rated Emotion Regulation:

Table 2 presents the standardized regression coefficients, F values, and adjusted R^2 from these three analyses. Again, the data indicates that each component of emotion regulation was best predicted by a unique combination of mother-and teacher-rated emotion variables. For example, Flexibility was predicted by age, maternal education, teacher-rated autonomy, mother-rated negative intensity, mother-rated aggressive-extroverted, mother-rated emotional competence, teacher-rated aggressive-extroverted, teacher-rated emotional competence, and teacher-rated withdrawn/difficult.

Discussion

This study must be viewed as a preliminary exploration of emotion regulation in children with Down Syndrome because of the very small sample and correlational nature of the data. Moreover, we do not have behavioral observations of the children to supplement our findings. However, the results do suggest some important points about emotional regulation in children with Down Syndrome. First, it appears that the emotional experience of children with Down Syndrome influences their emotional regulation and that their emotional experience/expression may not be as flat or mild as previously suggested. Second, the data suggest that different components of emotional regulation have different predictors that contribute to each aspect of regulation. Finally, the data clearly indicate the importance of context (school vs. home): Teacher and mother reports were not correlated and often their reports were in different directions suggesting teachers and mothers view the same emotion behavior in very different ways. This implies that the behavior of children with Down Syndrome may have different consequences or elicit different responses depending on the context or social relationship. Hence, assessment of the adaptiveness of a child's behavior needs to be linked to the context if the assessment is to be accurate and of benefit to the child.

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Table 1

Final Backwards Regression models estimating mother-rated emotion-regulation from emotional intensity, emotional expression, and autonomy.

Emotion Regulation	Modulation Beta	Flexibility Beta	Organization Beta
Child Age (in months)	___	.26**	1.1**
Maternal Education (years)	___	.60**	-.16*
Autonomy/Independence			
Mother-Rated	.59***	1.9***	.90***
Teacher-Rated	___	___	-.95***
Mother-Rated Emotional Intensity			
AIM Positive	-.50*	-5.3***	-.78***
AIM Negative	___	.44**	___
Teacher-Rated Emotional Intensity			
AIM Positive	___	-.38**	.51***
AIM Negative	___	___	___
Mother-Rated Emotional Expressivity			
Competent Expressivity	___	___	___
Withdrawal	___	___	___
Aggressive-Extroverted	___	___	-.38**
Teacher-Rated Emotional Expressivity			
Competent Expressivity	___	.55**	-.48**
Withdrawn/difficult	___	___	___
Aggressive-Extroverted	-.51*	-.16[t]	-.18**

(table continues)

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Emotion Regulation	Modulation	Flexibility	Organization
F	8.5***	17.8***	18.2***
df	3, 9	8, 4	9,3
adjusted R^2	.65	.77	.78

$^t p = .06$, * $p < .05$, ** $p < .01$, $p < .001$

Note: Beta refers to the standardized coefficient.

Table 2

Final Backwards Regression models estimating teacher-rated emotion-regulation from emotional intensity, emotional expression, and autonomy.

Emotion Regulation	Modulation	Flexibility	Organization
	Beta	Beta	Beta
Child Age (in months)	1.2**	1.5***	.69**
Maternal Education (years)	___	.22 (ns)	.37*
Autonomy/Independence			
Mother-Rated	.88 (ns)	___	___
Teacher-Rated	-.77***	-1.3**	___
Mother-Rated Emotional Intensity			
AIM Positive	___	___	.47*
AIM Negative	___	.42*	.66*
Teacher-Rated Emotional Intensity			
AIM Positive	-.16*	___	-.57***
AIM Negative	___	___	___
Mother-Rated Emotional Expressivity			
Competent Expressivity	.27***	.33***	.60**
Withdrawal	___	___	___
Aggressive-Extroverted	-1.1***	-1.6***	-1.6**
Teacher-Rated Emotional Expressivity			
Competent Expressivity	-.73**	-1.5**	-1.1**
Withdrawn/difficult	-1.6***	-1.4***	-.45**
Aggressive-Extroverted	-1.1**	1.1**	.87**

(table continues)

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Emotion Regulation	Modulation	Flexibility	Organization
F	14.7***	27.4***	15.6***
df	8, 4	9, 3	10, 2
adjusted R^2	.68	.63	.81

* $p < .05$, ** $p < .01$, $p < .001$

Note: Beta refers to the standardized coefficient. NS indicates non-significant but retained in the final regression model.